

**PAG 475 – PRECISION AG SYSTEMS  
SPRING 2024**

**PAG 475 – PRECISION AG SYSTEMS**

**Basic Information**

**Course prefix, catalog number, and title:** PAG 475 – Precision Ag Systems (capstone course)

**Number of credits:** 2

**Term and year:** Spring/2024

**Time and place:** Wednesday & Friday 10:00 am – 10:50 am – Location: LADD HALL 114

**Instructor's name:** Dr. Paulo Flores

**Office location:** 104L Ladd Hall

**Office hours:** Wednesday and Friday, 11:00 am – 12:00 pm. Drop-ins are acceptable at other times, but instructor availability cannot always be guaranteed. Students are also welcome to call the office, request a Zoom meeting, or send questions/requests via e-mail.

**Phone Number:** 701.231.5348

**Email Address:** [paulo.flores@ndsu.edu](mailto:paulo.flores@ndsu.edu)

**Zoom PMI :** 573.779.7527

**Communication**

- The primary method by which course-related information will be communicated is during class. Reminders, notification of any schedule or assignment changes will be communicated through NDSU email and posted on Blackboard announcements page.
- Your NDSU email address is the official route for information.
- The class will be face-to-face. Zoom will be used mainly for recording purposes.

**Technology Concerns**

For any technology concern, please contact the IT Help Desk.

Email: [ndsu.helpdesk@ndsu.edu](mailto:ndsu.helpdesk@ndsu.edu)

Call: 701-231-8685 (option 1)

**Bulletin Description**

Capstone learning experience involving team solutions to problems relevant in precision agriculture, which involves project planning and execution, including technical communication, budgeting, team management, contracts, and timelines. Emphasis will be on team management, professionalism, communication skills, formal written report, and formal oral presentation.

**Prerequisites**

- Senior stand
- PAG 315 and PAG 454.

**Textbook**

None.

**Required Student Resources**

There is no required text for this course. Students are expected to make use of knowledge and resources gained/learned from previous coursework, in addition to seek other sources of

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knowledge and information as needed, to complete the capstone project. Course information and documents will be made available on Blackboard.

### **Course Objectives**

1. To apply what has been learned in other PAG courses to real world agricultural problems.
2. To work in a team setting to solve a problem presented to the team as part of the capstone project.
3. To develop written and oral skills to effectively communicate the work done in a manner appropriate to the audience.
4. To interact with professionals and practitioners in the field of precision agriculture.
5. To demonstrate professional behavior and ethics.

### **Outcomes**

Students will:

- Identify strategic project objectives and key tasks associated with specific objective completion;
- Plan the timeline and details of a project;
- Demonstrate ability to work effectively as a group to accomplish the project within the given timeline;
- Demonstrate professionalism, ethical responsibility, and integrity during the project execution and preparation of the report;
- Research different sources of knowledge to aid with the project;
- Make an assessment of the expertise within the group and make a determination if external guidance/help is necessary to cover eventual knowledge gaps;
- Enhance written communication skills through a final report;
- Enhance oral communication skills through a final technical presentation;
- Practice engagement with the audience by answering questions and listening to criticism.

### **Modes of Presentation**

Lecture with PowerPoint – classroom and Zoom (recording purposes)  
Guest Speakers  
Team meetings with technical advisor and/or instructor

### **Blackboard**

Blackboard will be used for announcements, class presentations, and for posting grades (information purposes only).

### **A Notice about Copyright of Course Materials**

Refer to NDSU [Policy 190](#) on Intellectual property.

- In this course recording the lectures is prohibited with your own personal devices (without prior express approval from the instructor).
- In this course, recording the lectures for anything other than personal use is prohibited.

### **Evaluation Procedures and Grading Criteria**

Students will be evaluated following the criteria listed on the table below.

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Items	% of the final grade*
In-class participation and weekly update	10%
Proposal outline	15%
<ul style="list-style-type: none"> <li>- <i>Written proposal 5%</i></li> <li>- <i>Oral presentation of the proposal 10% (open to ABEN Dept.)</i></li> </ul>	
Final presentation	25%
<ul style="list-style-type: none"> <li>- <i>Presentation draft and practice 5% (with team and instructor)</i></li> <li>- <i>Final presentation evaluation 20% (open to everyone)</i></li> </ul>	
Team written report	30%
<ul style="list-style-type: none"> <li>- <i>First report draft 5%</i></li> <li>- <i>Second report 10%</i></li> <li>- <i>Final report 15%</i></li> </ul>	
<i>Teamwork and leadership**</i>	10%
<i>Team elevator speech (video recording, max 2 minutes)</i>	10%

\*Letter grades will be assigned using the following scale: A= 90.0-100%; B= 80.0-89.9%, C= 70.0-79.9%; D= 60-69.9%, and F= less than 60%.

\*\* Assessed by the instructor taking in consideration input from the team members and mentor (if any).

Although the course is based on teamwork, grades will be assigned individually based on both group and individual performance. While the table above shows the grade been assigned to group activities, students within each group will be evaluated individually taking in consideration, but not limited to, their contribution to the final products, engagement in activities related to the project, and performance as a team player.

**Project Outline and Final Report**

The proposal outline should include:

- Introduction
  - The problem statement, rationale
  - Objective(s) of the project
- Available resources and steps to be taken
- Expected results/outcomes of the project
- Project schedule: Gantt chart (timeline)

A written project report, product of a teamwork, is a requirement for the course. All work is to be done on a computer (except in-class items and scratch calculations). The report should be written in Times New Roman, 12-point font size, and double-space between lines. The project report should be written in third person. No "I", "we", "my", "our", "you", or "your" should be used in the report's narrative. The project report's narrative must be developed in consultation with personnel from the NDSU Center for Writers. Suggestions from the Center for Writers should be incorporated in the reports, unless a valid justification is provided. Evidence of interactions with consultants from the Center for Writers must be provided to the instructor (at least 3 meetings). The final report should be submitted by the published deadline. Late submission will not be accepted. In addition to the written document, each team is required to do an oral presentation of their project. That presentation will be evaluated by the instructor, other teams, faculty, and staff members attending the presentation.

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*More guidelines and details about how to organize and write the project report will be provided as the teams are formed and the project outline is submitted.*

### **Rules and Expectations for the course**

Here are some rules and expectations for the course:

- 1) All students are expected to actively participate during classroom discussions and to actively contribute toward the project's final products.
- 2) All students are required to attend group meetings with the instructor. Instructor must be notified ahead of time if students are meeting with technical mentor or working on other activities related to the project.
- 3) It is each student and group's responsibility to complete their project. Make sure that the project's goals are clear and that they can be accomplished during the course time frame.
- 4) In the case of a mentor is needed for a project, the instructor might refer the group to a NDSU faculty member with expertise on the topic related to the project. In addition, the group is welcome to indicate names and discuss potential mentors with the instructor.
- 5) Team members must meet at least once a week with the course instructor to provide updates on the project progress.
- 6) Students must attend mandatory classroom activities, individual team meetings with the instructor, and scheduled presentations.
- 7) Teams must prepare a detailed written final project report. Copies of that report must be provided to the instructor, faculty mentors, and project sponsors (if any).
- 8) The report should be written in a professional format, using appropriate language, grammar, and terminology. Students are welcomed and encouraged to read and edit one another's reports. Students are required to meet with personnel of the NDSU Center for Writers for additional assistance with their reporting writing.
- 9) Submit the draft report on time. It helps the team to stay on track to submit the final report by the published deadline. Late submission might result in a grade penalty, at the instructor's discretion, and it may vary on a case-by-case basis.
- 10) There will be no extensions for submission of the final report!
- 11) Teams must prepare and deliver a final presentation, based on the final project report, for the faculty, project sponsors (if any), and others invited for the final presentation.
- 12) There will be no make-up for the practice run or final presentation!

### **Attendance Statement**

According to NDSU Policy 333 ([www.ndsu.edu/fileadmin/policy/333.pdf](http://www.ndsu.edu/fileadmin/policy/333.pdf)), attendance in classes is expected.

Attendance in classes is expected and important. (The term "class" includes class, online class, laboratory, field trips, group exercises, or other activities related to the course). However, there are instances in which students are unable to attend class, and if those are described in policy 333, then those absences will be excused. Absences not covered under policy 333 are excusable at the discretion of the instructor. However, class policies regarding class absence are provided below.

If a student will be missing class for an event related to university clubs or teams, or other excusable reason to be determined by the instructor, the student must let the instructor know before he/she misses the class. Consideration will be given to those students who have a valid excusable reason when making a determination regarding making up assignments or tests.

- **Students that can not attend the class in-person due to medical condition or other reasons may seek an accommodation through the Disability Services (701-231-8463; <https://www.ndsu.edu/disabilityservices/>).**

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- Please protect your health and the health of others by staying at home if you are sick. Due to the dynamic nature of the pandemic, the instructor will remain flexible and provide accommodation (at his own discretion) for those students affected by Covid-19.

### **Dead Week Policy**

The NDSU Dead Week policy is available at <http://www.ndsu.edu/registrar/dates/deadweek/>.

### **Veterans and Military Personnel**

Veterans or military personnel with special circumstances or who are activated are encouraged to notify the instructor as early as possible and are encouraged to provide Activation Orders.

### **Students with Special Requirements**

Any students with disabilities who need accommodations in this course are invited to share these concerns or requests with the instructor and contact the [Center for Accessibility and Disability Resources](#) as soon as possible.

### **Approved Academic Honesty Statement**

The academic community is operated on the basis of honesty, integrity, and fair play. [NDSU Policy 335: Code of Academic Responsibility and Conduct](#) applies to cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context. Students found guilty of academic misconduct are subject to penalties, up to and possibly including suspension and/or expulsion. Student academic misconduct records are maintained by the [Office of Registration and Records](#). Informational resources about academic honesty for students and instructional staff members can be found at <http://www.ndsu.edu/academichonesty>.

### **Use of Cell Phones and Other Electronic Devices**

All participants in this class are subject to NDSU University Senate Policy 158: Acceptable use of Electronic Communications Devices (<http://www.ndsu.edu/fileadmin/policy/158.pdf>).

As a courtesy to other students and the instructor, all cell phones, iPods, MP3 players, and other electronic devices, except handheld calculators, should be turned off or placed in a vibrate-only mode during class time. Initiating phone calls, text message, or other types of messages during class time -including those to friends, family, classmates, coworkers, or supervisors—is unacceptable unless there is a genuine emergency. Examples of emergencies include weather-related school closing announcements; fire, bomb, or other threats to public safety and well-being; and other incidents in which the NDSU system is or could be activated to provide broadcast messages to the NDSU community.

Use of cell phones or other portable electronic devices for communication, transmission, retrieval, or storage of information during the administration of a test or quiz may be considered an incident of **academic dishonesty**. One exception to this policy is the use of handheld calculators for computational purposes. Use of cell phones or similar devices as a calculator during tests and quizzes will not be allowed because it is difficult to distinguish such activity from sending and receiving text messages, which could obviously be interpreted as a form of academic dishonesty.

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**Important Dates (Full NDSU dates/deadlines can be found [here](#))**

Jan 1	Mon	HOLIDAY — New Year's Day (offices closed)
Jan 8	Mon	Classes begin at 4:00 p.m.
Jan 9	Tue	First full day of classes
Jan 15	Mon	HOLIDAY — Martin Luther King, Jr. Day (no classes, offices closed)
Jan 16	Tue	Last day to be added to Campus Connection Wait Lists
Jan 18	Thu	Last day to Add classes via Campus Connection* Permit needed after this date.
Jan 18	Thu	Last day for no-record Drop of classes @ 100% refund*(full semester classes only)
Jan 18	Thu	Last day to Withdraw to Zero Credits @ 100% refund*(full semester classes only)
Jan 24	Wed	Payments due for NDSU account balances
Jan 29	Mon	Last day to submit requests to Audit, Pass/Fail
Feb 19	Mon	HOLIDAY — Presidents' Day (no classes, offices closed)
Feb 19	Mon	Last day to Withdraw to Zero Credits @ 75% refund*full semester classes only)
Mar 4-8	Mon-Fri	Spring Break Week (no classes, offices open)
Mar 15	Fri	Late fee applied to unpaid account balances (11:59 p.m.)
Mar 21	Thu	Last day to Withdraw to Zero Credits @ 50% refund*(full semester classes only). No refunds issued for withdraw to zero credits after this date.
Mar 29-Apr 1	Fri-Mon	HOLIDAY -- Spring Recess (no classes, offices closed Friday, offices open Monday)
Apr 5	Fri	Last day to Drop classes with 'W' record*
Apr 5	Fri	Last day to Withdraw to Zero Credits for Spring
Apr 15	Mon	Late fees applied to unpaid account balances (11:59 p.m.)
Apr 29-May 3	Mon-Fri	Dead Week
May 6-10	Mon-Fri	Final Examinations
May 11	Sat	Commencement ceremony

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**Course Schedule/Outline**

Tentative schedule. The schedule below is subject to changes.

<b>Week</b>	<b>Date</b>	<b>Topics</b>
1	Jan 10	Class introduction
1	Jan 12	Listing topics of interest and CVs sent to instructor
2	Jan 17	Assigning members and topics to the groups
2	Jan 19	Team Work – Guest Lecture
3	Jan 24	Writing Structure – Guest Lecture
3	Jan 26	Brainstorming and inventorying resources
4	Jan 31	Gantt Chart and Team meetings
4	Feb 02	Introduction writing example - Team meetings
5	Feb 07	Team meetings ( <b>Due date</b> - Written Proposal outline – 5% of the grade)
5	Feb 09	Team meetings
6	Feb 14	Team Meetings
6	Feb 16	Project Proposal Presentations – (10% of grade)
7	Feb 21	Report Writing (Guest Lecture)
7	Feb 23	Team meetings
8	Feb 28	Team meetings
8	Mar 01	Team meetings ( <b>Due Date</b> – 1 <sup>st</sup> Draft Report – 5% of the grade)
	<b>Mar 06</b>	<b>Spring Break – no class</b>
	<b>Mar 08</b>	<b>Spring Break – no class</b>
9	Mar 13	Team meetings
9	Mar 15	Team meetings
10	Mar 20	Team meetings
10	Mar 22	Team meetings
11	Mar 27	Team meetings
11	<b>Mar 29</b>	<b>Holiday – Spring Recess – no class</b>
12	Apr 03	Team meetings
12	Apr 05	Team meetings ( <b>Due Date</b> – 2 <sup>nd</sup> Draft Report – 10% of the grade)
13	Apr 10	Team meetings
13	Apr 12	Team meetings
14	Apr 17	Team meetings
14	Apr 19	Team meetings
15	Apr 24	Practice Presentation – Groups 1 and 2

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<b>15</b>	Apr 26	Practice Presentation – Group 3
	May 1	Dead Week – Project Presentation - Groups 1 and 2 (25% of the grade)
	May 3	Dead Week – Project Presentation - Group 3 (25% of the grade)
<b>16</b>	<b>May 08</b>	<b>DUE DATE - FINAL REPORT (electronic format; 15% of the grade)</b>